

IPSec Redundantie van ISDN configureren met snelkiezer

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Dit document biedt een voorbeeldconfiguratie voor het versleutelen van verkeer vanaf het netwerk achter router 1 naar het netwerk achter router 2 (de Loopback 0s wordt in dit voorbeeld gebruikt als netwerken). Als de primaire verbinding (Ethernet) tussen router 1 en router 2 daalt, blijft IP Security (IPSec) verkeer door de secundaire verbinding (ISDN) stromen. Er zijn verschillende manieren om dit doel te bereiken; u kunt het dialerhorloge, de back-up interface, het stroomcircuit en de drijvende statische lading gebruiken. Deze voorbeeldconfiguratie toont het dialer watch-mechanisme aan. Voor meer informatie over andere functies, raadpleeg de [Evaluatie van back-up-interfaces, zwevende statische routen en Dialer Watch voor DDR-back-up](#).

[Voorwaarden](#)

[Vereisten](#)

Er zijn geen specifieke vereisten van toepassing op dit document.

[Gebruikte componenten](#)

De informatie in dit document is gebaseerd op de volgende software- en hardware-versies:

- Cisco 2621 en 3640 routers
- Cisco IOS®-software release 12.3(3)S

De informatie in dit document is gebaseerd op apparaten in een specifieke laboratoriumomgeving. Alle apparaten die in dit document worden beschreven, hadden een opgeschoonde (standaard)configuratie. Als uw netwerk leeft, zorg ervoor dat u de potentiële impact van om het even welke opdracht begrijpt alvorens u het gebruikt.

Conventies

Raadpleeg [Cisco Technical Tips Conventions](#) (Conventies voor technische tips van Cisco) voor meer informatie over documentconventies.

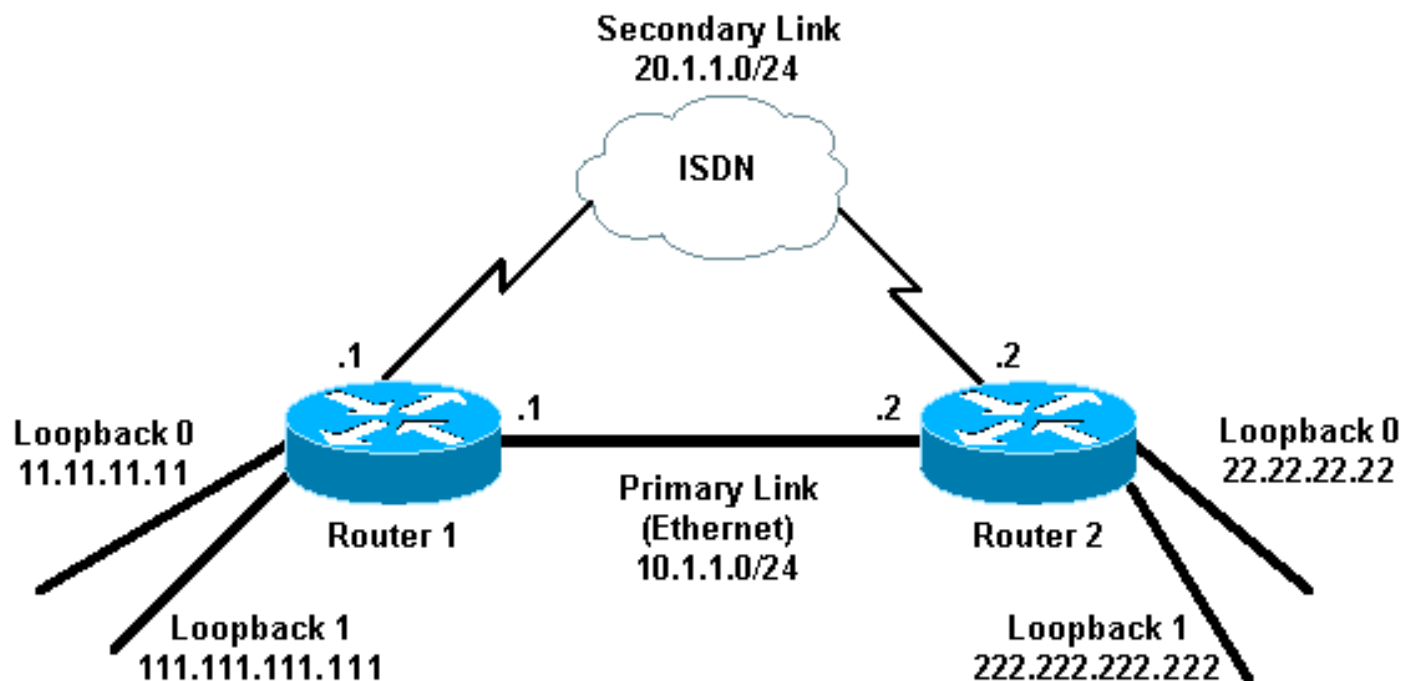
Configureren

Deze sectie bevat informatie over het configureren van de functies die in dit document worden beschreven.

N.B.: Als u aanvullende informatie wilt vinden over de opdrachten in dit document, gebruikt u het [Opdrachtplanningprogramma](#) (alleen [geregistreerd](#) klanten).

Netwerkdigram

Dit document gebruikt de netwerkinstellingen die in het diagram worden weergegeven:



Configuraties

Dit document gebruikt de configuraties die hier worden weergegeven:

- [router 1 \(2621\)](#)
- [router 2 \(3640\)](#)

router 1 (2621)

```
r1#show running-config
Building configuration...

Current configuration : 2244 bytes
!
version 12.3
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname r1
!
boot-start-marker
boot-end-marker
!
!
username r2 password 0 cisco
!--- This is the username for remote router (Router 2)
!--- and shared secret. Shared secret (used for
Challenge Handshake !--- Authentication Protocol [CHAP])
must be the same on both sides.
no aaa new-model
ip subnet-zero
ip tcp synwait-time 5
!! no ip domain lookup
! ip audit notify log ip audit po max-events 100
ip ssh break-string no ftp-server write-enable
!!!
crypto isakmp policy 10
  hash md5
  authentication pre-share
crypto isakmp key cisco address 222.222.222.222
!
!
  crypto ipsec transform-set abc esp-des esp-md5-hmac
!
crypto map cisco local-address Loopback1
crypto map cisco 10 ipsec-isakmp
  set peer 222.222.222.222
!--- Peer address, Loopback 1 of Router 2 set transform-
set abc
  match address 101
!--- Networks to encrypt (Loopback 0 on both ends) !
isdn switch-type basic-ts013
!!!!!! no voice hpi capture buffer
no voice hpi capture destination
!!!! interface Loopback0 !--- Network to encrypt ip address 11.11.11.11 255.255.255.0
! interface Loopback1 !--- Used for peer address for IPSec ip address 111.111.111.111 255.255.255.0
! interface FastEthernet0/0 !--- Primary link ip address 10.1.1.1 255.255.255.0
no ip route-cache
!--- Enable process switching no ip mroute-cache duplex auto speed auto
crypto map cisco
!--- Apply crypto map on primary interface ! interface BRI0/0 no ip address encapsulation ppp no ip route-cache no ip mroute-cache dialer pool-member 1 isdn switch-type basic-ts013 no cdp enable
! interface Dialer1 !--- Backup link ip address 20.1.1.1 255.255.255.0 encapsulation ppp
no ip route-cache
!--- Enable process switching ip ospf cost 9999
!--- Increase the cost so that when primary comes up again, !--- Open Shortest Path First (OSPF) routes are !--- preferred using the primary link (due to better cost).
no ip mroute-cache
  dialer idle-timeout 180
  dialer pool 1
  dialer string 94134028
dialer watch-group 1
```

```
!--- Enable dialer watch on this backup interface. !---  
Watch the route specified with the dialer watch-list 1  
command.
```

```
dialer-group 1  
!--- Apply interesting traffic defined in dialer list 1.  
no peer neighbor-route ppp authentication chap crypto  
map cisco  
!--- Apply crypto map on backup interface. ! router ospf  
1  
!--- OSPF advertising Loopback 0, Loopback 1, !---  
primary, and secondary links. log-adjacency-changes  
network 10.1.1.0 0.0.0.255 area 0  
  network 11.11.11.0 0.0.0.255 area 0  
  network 20.1.1.0 0.0.0.255 area 0  
  network 111.111.111.0 0.0.0.255 area 0  
!  
ip http server  
no ip http secure-server  
ip classless  
!  
!  
access-list 101 permit ip host 11.11.11.11 host  
22.22.22.22  
!--- Access control list (ACL) 101 is the !--- IPsec  
traffic used in match address. access-list 110 deny ip  
any any  
!--- ACL 110 is for the dialer list to mark !--- all IP  
traffic uninteresting. The dialer watch will !---  
trigger the ISDN backup when the route is lost. dialer  
watch-list 1 ip 222.222.222.222 255.255.255.255  
!--- This defines the route(s) to be watched. !--- This  
exact route (including subnet mask) !--- must exist in  
the routing table. !--- Use the dialer watch-group 1  
command to apply this !--- list to the backup interface.
```

```
dialer watch-list 1 delay route-check initial 10  
dialer-list 1 protocol ip list 110  
!--- Interesting traffic is defined by ACL 110. !---  
This is applied to Dialer1 using dialer group 1. !!!  
dial-peer cor custom ! ! ! ! ! line con 0 exec-timeout 0  
0 logging synchronous escape-character 27 line aux 0  
line vty 0 4 login ! end
```

router 2 (3640)

```
r2#show running-config  
Building configuration...  
  
Current configuration : 2311 bytes  
!  
version 12.3  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname r2  
!  
boot-start-marker  
boot-end-marker  
!  
username r1 password 0 cisco  
!--- This is the username for remote router (Router 1)
```

```

!--- and shared secret. Shared secret (used for CHAP) !-
-- must be the same on both sides. no aaa new-model ip
subnet-zero ip tcp synwait-time 5 ! ! no ip domain
lookup ! ip audit notify log ip audit po max-events 100
ip ssh break-string no ftp-server write-enable ! ! !
crypto isakmp policy 10
  hash md5
  authentication pre-share
crypto isakmp key cisco address 111.111.111.111
!
!
  crypto ipsec transform-set abc esp-des esp-md5-hmac
!
!
crypto map cisco local-address Loopback1
crypto map cisco 10 ipsec-isakmp
  set peer 111.111.111.111
!--- Peer address, Loopback 1 of Router 1 set
transform-set abc
  match address 101
!--- Networks to encrypt (Loopback 0 on both ends) !
isdn switch-type basic-ts013 ! ! ! ! ! ! ! ! ! no voice
hpi capture buffer no voice hpi capture destination ! !
! ! ! ! interface Loopback0 ip address 22.22.22.22
255.255.255.0 !--- Network to encrypt ! interface
Loopback1 ip address 222.222.222.222 255.255.255.0 !---
Used for peer address for IPSec. ! interface BRI0/0 no
ip address encapsulation ppp no ip route-cache no ip
mroute-cache dialer pool-member 1 isdn switch-type
basic-ts013 ! interface Ethernet0/0 !--- Primary link ip
address 10.1.1.2 255.255.255.0 no ip route-cache
!--- Enable process switching. no ip mroute-cache half-
duplex crypto map cisco
!--- Apply crypto map on primary interface. ! interface
Dialer1 ip address 20.1.1.2 255.255.255.0 encapsulation
ppp no ip route-cache ip ospf cost 9999
no ip mroute-cache
dialer pool 1
dialer idle-timeout 600
dialer remote-name r1
!--- Dialer for the BRI interface of the remote router
!--- without a dial string. dialer-group 1 !--- Apply
interesting traffic defined in dialer list 1. ppp
authentication chap crypto map cisco
!--- Apply crypto map on backup interface. ! router ospf
1
  log-adjacency-changes
  network 10.1.1.0 0.0.0.255 area 0
  network 20.1.1.0 0.0.0.255 area 0
  network 22.22.22.0 0.0.0.255 area 0
  network 222.222.222.0 0.0.0.255 area 0
!
no ip http server
no ip http secure-server
ip classless
!
!
access-list 101 permit ip host 22.22.22.22 host
11.11.11.11
access-list 110 deny ospf any any
!--- Mark OSPF as uninteresting. !--- This will not
allow OSPF hellos !--- to try to bring the link up.
access-list 110 permit ip any any
dialer-list 1 protocol ip list 110

```

```
!--- Interesting traffic is defined by ACL 110. !---  
This is applied to Dialer1 using dialer group 1. ! line  
con 0 exec-timeout 0 0 logging synchronous escape-  
character 27 line aux 0 line vty 0 4 login ! end
```

Verifiëren

Deze sectie verschaft informatie die u kunt gebruiken om te bevestigen of uw configuratie correct werkt.

Uitvoer van voorbeeld

Bepaalde opdrachten met **show** worden ondersteund door de tool [Output Interpreter \(alleen voor geregistreerde klanten\)](#). Hiermee kunt u een analyse van de output van opdrachten met **show** genereren.

- Routing-tabel van router 1 (2621) - primaire link naar boven

```
r1#show ip route
```

```
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
I - IS-IS, su - IS-IS summary, L1 - IS-IS level-1,  
L2 - IS-IS level-2, ia - IS-IS inter area,  
* - candidate default, U - per-user static route,  
o - ODR, P - periodic downloaded static route
```

```
Gateway of last resort is not set
```

```
222.222.222.0/32 is subnetted, 1 subnets
```

```
O    222.222.222.222 [110/2] via 10.1.1.2, 00:00:25, FastEthernet0/0
```

```
20.0.0.0/24 is subnetted, 1 subnets
```

```
C    20.1.1.0 is directly connected, Dialer1
```

```
22.0.0.0/32 is subnetted, 1 subnets
```

```
O    22.22.22.22 [110/2] via 10.1.1.2, 00:00:25, FastEthernet0/0
```

```
111.0.0.0/24 is subnetted, 1 subnets
```

```
C    111.111.111.0 is directly connected, Loopback1
```

```
10.0.0.0/24 is subnetted, 1 subnets
```

```
C    10.1.1.0 is directly connected, FastEthernet0/0
```

```
11.0.0.0/24 is subnetted, 1 subnets
```

```
C    11.11.11.0 is directly connected, Loopback0
```

- Routing-tabel van router 2 (3640) - primaire link naar boven

```
r2#show ip route
```

```
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
I - IS-IS, su - IS-IS summary, L1 - IS-IS level-1,  
L2 - IS-IS level-2, ia - IS-IS inter area,  
* - candidate default, U - per-user static route,  
o - ODR, P - periodic downloaded static route
```

```
Gateway of last resort is not set.
```

```
C    222.222.222.0/24 is directly connected, Loopback1
```

```
20.0.0.0/24 is subnetted, 1 subnets
```

```
C    20.1.1.0 is directly connected, Dialer1
```

```

22.0.0.0/24 is subnetted, 1 subnets
C    22.22.22.0 is directly connected, Loopback0
111.0.0.0/32 is subnetted, 1 subnets
O    111.111.111.111 [110/11] via 10.1.1.1, 00:06:22, Ethernet0/0
10.0.0.0/24 is subnetted, 1 subnets
C    10.1.1.0 is directly connected, Ethernet0/0
11.0.0.0/32 is subnetted, 1 subnets
O    11.11.11.11 [110/11] via 10.1.1.1, 00:06:23, Ethernet0/0

```

- OSPF-buurman van router 1 (2621) - primaire verbinding omhoog

```

r1#show ip ospf neighbor
Neighbor ID      Pri   State           Dead Time   Address      Interface
222.222.222.222  1    FULL/DR         00:00:33   10.1.1.2    FastEthernet0/0

```

- OSPF-buurman van router 2 (3640) - primaire verbinding omhoog

```

r2#show ip ospf neighbor
Neighbor ID      Pri   State           Dead Time   Address      Interface
111.111.111.111  1    FULL/BDR        00:00:31   10.1.1.1    Ethernet0/0

```

- Routing tabel van router 1 (2621) - primaire link onderaan

```

r1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       I - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2,
       ia - IS-IS inter area, * - candidate default,
       U - per-user static route, o - ODR,
       P - periodic downloaded static route

Gateway of last resort is not set.

```

```

222.222.222.0/32 is subnetted, 1 subnets
O    222.222.222.222 [110/10000] via 20.1.1.2, 00:00:09, Dialer1
20.0.0.0/24 is subnetted, 1 subnets
C    20.1.1.0 is directly connected, BRI0/0
20.0.0.0/24 is subnetted, 1 subnets
C    20.1.1.0 is directly connected, Dialer1
22.0.0.0/32 is subnetted, 1 subnets
O    22.22.22.22 [110/10000] via 20.1.1.2, 00:00:09, Dialer1
111.0.0.0/24 is subnetted, 1 subnets
C    111.111.111.0 is directly connected, Loopback1
10.0.0.0/24 is subnetted, 1 subnets
O    10.1.1.0 [110/10009] via 20.1.1.2, 00:00:09, Dialer1
11.0.0.0/24 is subnetted, 1 subnets
C    11.11.11.0 is directly connected, Loopback0

```

- Routing tabel van router 2 (3640) - primaire link onderaan

```

r2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       I - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2,
       ia - IS-IS inter area, * - candidate default,
       U - per-user static route, o - ODR,
       P - periodic downloaded static route

Gateway of last resort is not set.

```

```

C    222.222.222.0/24 is directly connected, Loopback1

```

```

    20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    20.1.1.0/24 is directly connected, Dialer1
C    20.1.1.1/32 is directly connected, Dialer1
    22.0.0.0/24 is subnetted, 1 subnets
C    22.22.22.0 is directly connected, Loopback0
111.0.0.0/32 is subnetted, 1 subnets
O    111.111.111.111 [110/10000] via 20.1.1.1, 00:00:07, Dialer1
    10.0.0.0/24 is subnetted, 1 subnets
C    10.1.1.0 is directly connected, Ethernet0/0
11.0.0.0/32 is subnetted, 1 subnets
O    11.11.11.11 [110/10000] via 20.1.1.1, 00:00:08, Dialer1

```

- OSPF-buurman van router 1 (2621) - primaire link onderaan

```

r1#show ip ospf neighbor
Neighbor ID      Pri   State           Dead Time   Address      Interface
222.222.222.222  0    FULL/ -        00:00:32   20.1.1.2    Dialer1

```

- OSPF-buurman van router 2 (3640) - primaire link onderaan

```

r2#show ip ospf neighbor
Neighbor ID      Pri   State           Dead Time   Address      Interface
111.111.111.111  0    FULL/ -        00:00:31   20.1.1.1    Dialer1

```

De **debug dialer** en verscheidene **tonen** hier weergegeven opdrachtoutput tonen de primaire verbinding als mislukt, en de dialer kijkt de verloren route op. De router initieert dan de backup-link en OSPF converteert door de secundaire link. Telkens als de tijdelijke onderbreking verloopt, controleert de router of de primaire verbinding is neergedaald. Als de primaire verbinding omhoog wordt gevonden, sluit dialer horloge de backup verbinding af nadat de timer voor het uitschakelen verloopt en tranen de verbinding af, en OSPF converteert als van de primaire verbinding zoals gebruikelijk.

Dit zijn de **debug** en **laat** opdrachtoutput van router één (2621) zien, wanneer de primaire link naar beneden gaat en opnieuw omhoog wordt gebracht.

```

r1#show debug
Dial on demand:
  Dial on demand events debugging is on

r1#
03:00:21: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to down
!--- Primary link was brought down manually when you disable the switch ports. 03:00:21: %OSPF-
5-ADJCHG: Process 1, Nbr 222.222.222.222 on FastEthernet0/0
from FULL to DOWN, Neighbor Down: Interface down or detached
!--- Primary link goes down. !--- OSPF loses neighbor adjacency. r1# !--- Dialer watch kicks in.
03:00:21: DDR: Dialer Watch: watch-group = 1
03:00:21: DDR: network 222.222.222.222/255.255.255.255 DOWN,
03:00:21: DDR: primary DOWN
03:00:21: DDR: Dialer Watch: Dial Reason: Primary of group 1 DOWN
03:00:21: DDR: Dialer Watch: watch-group = 1,
03:00:21: BR0/0 DDR: rotor dialout [best]
  least recent failure is also most recent failure
03:00:21: BR0/0 DDR: rotor dialout [best] also has most recent failure
03:00:21: BR0/0 DDR: rotor dialout [best]
03:00:21: DDR: dialing secondary by dialer string 94134028 on Di1
03:00:21: BR0/0 DDR: Attempting to dial 94134028
03:00:21: DDR: Dialer Watch: watch-group = 1
r1#
03:00:21: DDR: network 222.222.222.222/255.255.255.255 DOWN,

```



```

03:00:21: DDR:      primary DOWN
03:00:21: DDR: Dialer Watch: Dial Reason: Secondary of group 1 AVAILABLE
03:00:21: DDR: Dialer Watch: watch-group = 1,
03:00:21: DDR: Dialer Watch: watch-group = 1
03:00:21: DDR:      network 222.222.222/255.255.255.255 DOWN,
03:00:21: DDR:      primary DOWN
03:00:21: DDR: Dialer Watch: Dial Reason: Secondary of group 1 AVAILABLE
03:00:21: DDR: Dialer Watch: watch-group = 1,
03:00:21: %ISDN-6-LAYER2UP: Layer 2 for Interface BR0/0, TEI 82 changed to up
03:00:94489280514: %LINK-3-UPDOWN: Interface BRI0/0:1, changed state to up
03:00:94489280516: BR0/0:1 DDR: Dialer Watch: resetting call in progress
03:00:94489280512: BR0/0:1: interface must be fifo queue, force fifo
03:00:94489280512: %DIALER-6-BIND: Interface BR0/0:1 bound to profile Di1
r1#
03:00:22: BR0/0:1 DDR: Remote name for r2
03:00:22: BR0/0:1 DDR: dialer protocol up
03:00:23: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0/0:1,
changed state to up
r1#
03:00:28: %ISDN-6-CONNECT: Interface BRI0/0:1 is now connected to 94134028 r2
!--- Backup link is now connected to Router 2. r1# 03:00:31: %OSPF-5-ADJCHG: Process 1, Nbr
222.222.222.222 on Dialer1
from LOADING to FULL, Loading Done
!--- OSPF converges over the backup link. r1# r1#show dialer

```

BRI0/0 - dialer type = ISDN

```

Dial String  Successes  Failures  Last DNIS  Last status
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.

```

BRI0/0:1 - dialer type = ISDN

```

Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up

```

Dial reason: Dialing on watched route loss

!--- Dial reason is the lost route. Interface bound to profile Di1 Time until disconnect 154 secs

!--- Idle timeout is ticking. Current call connected 00:00:25 Connected to 94134028 (r2)

```

BRI0/0:2 - dialer type = ISDN Idle timer (120 secs), Fast idle timer (20 secs) Wait for carrier
(30 secs), Re-enable (15 secs) Dialer state is idle Di1 - dialer type = DIALER PROFILE Idle
timer (180 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up Number of active calls = 1 Dial String Successes Failures
Last DNIS Last status 94134028 45 24 00:00:27 successful Default r1#show isdn active

```

ISDN ACTIVE CALLS

Call Type	Calling Number	Called Number	Remote Name	Seconds Used	Seconds Left	Seconds Idle	Charges Units/Currency
Out	---N/A---	94134028	r2	37	142	37	0

r1#show dialer

BRI0/0 - dialer type = ISDN

```

Dial String  Successes  Failures  Last DNIS  Last status
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.

```

BRI0/0:1 - dialer type = ISDN

```

Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up

```

Dial reason: Dialing on watched route loss
Interface bound to profile Di1

Time until disconnect 47 secs

!--- Idle timeout is ticking. Current call connected 00:02:12 Connected to 94134028 (r2)
BRI0/0:2 - dialer type = ISDN Idle timer (120 secs), Fast idle timer (20 secs) Wait for carrier
(30 secs), Re-enable (15 secs) Dialer state is idle Di1 - dialer type = DIALER PROFILE Idle
timer (180 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up Number of active calls = 1 Dial String Successes Failures
Last DNIS Last status 94134028 45 24 00:02:14 successful Default r1#**show dialer**

BRI0/0 - dialer type = ISDN

Dial String Successes Failures Last DNIS Last status
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.

BRI0/0:1 - dialer type = ISDN
Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: Dialing on watched route loss
Interface bound to profile Di1

Time until disconnect 0 secs

!--- Idle timeout is ticking. Current call connected 00:02:59 Connected to 94134028 (r2)
BRI0/0:2 - dialer type = ISDN Idle timer (120 secs), Fast idle timer (20 secs) Wait for carrier
(30 secs), Re-enable (15 secs) Dialer state is idle Di1 - dialer type = DIALER PROFILE Idle
timer (180 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up Number of active calls = 1 Dial String Successes Failures
Last DNIS Last status 94134028 45 24 00:03:05 successful Default r1# **03:03:22: BR0/0:1 DDR: idle
timeout**

*!--- Idle timed out. !--- Dialer watch checks lost routes !--- again and reset the idle time
since primary is not up yet.* 03:03:22: DDR: Dialer Watch: watch-group = 1 03:03:22: DDR: network
222.222.222.222/255.255.255.255 UP, 03:03:22: DDR: **primary DOWN**
!--- Primary link is still down. r1# r1#**show dialer**

BRI0/0 - dialer type = ISDN

Dial String Successes Failures Last DNIS Last status
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.

BRI0/0:1 - dialer type = ISDN
Idle timer (180 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: Dialing on watched route loss
Interface bound to profile Di1

Time until disconnect 154 secs

!--- Idle timeout was reset by dialer watch. Current call connected 00:03:25 Connected to
94134028 (r2) BRI0/0:2 - dialer type = ISDN Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs) Dialer state is idle Di1 - dialer type = DIALER
PROFILE Idle timer (180 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable
(15 secs) Dialer state is data link layer up Number of active calls = 1 Dial String Successes
Failures Last DNIS Last status 94134028 45 24 00:03:28 successful Default r1# 03:04:59:

%LINEPROTO-5-UPDOWN: Line protocol on Interface **FastEthernet0/0,**
changed state to up

!--- Primary link was brought up manually when the switch ports are enabled. r1# r1# 03:05:50:

%OSPF-5-ADJCHG: Process 1, **Nbr 222.222.222.222 on FastEthernet0/0**
from LOADING to FULL, Loading Done

r1#
r1#**show ip ospf neigh**

Neighbor ID	Pri	State	Dead Time	Address	Interface
222.222.222.222	0	FULL/ -	00:00:02	20.1.1.2	Dialer1

```

!--- OSPF over secondary link is still up because !--- the call is not terminated yet, waiting
for idle timeout. 222.222.222.222 1 FULL/DR 00:00:38 10.1.1.2 FastEthernet0/0 !--- OSPF is now
starts to converge over primary link. r1# r1#show ip route 222.222.222.222
!--- The watched route is now learned through the primary link. !--- Check the cost. Routing
entry for 222.222.222.222/32
  Known via "ospf 1", distance 110, metric 2, type intra area
  Last update from 10.1.1.2 on FastEthernet0/0, 00:00:16 ago
  Routing Descriptor Blocks:
    * 10.1.1.2, from 222.222.222.222, 00:00:16 ago, via FastEthernet0/0
      Route metric is 2, traffic share count is

r1#
03:06:22: BR0/0:1 DDR: idle timeout
!--- Idle timed out. !--- Dialer watch checks lost routes. Since primary is up, !--- it tears
down the call. 03:06:22: DDR: Dialer Watch: watch-group = 1 03:06:22: DDR: network
222.222.222.222/255.255.255.255 UP, 03:06:22: DDR: primary UP
03:06:22: BR0/0:1 DDR: disconnecting call
03:06:22: BR0/0:1 DDR: Dialer Watch: resetting call in progress
03:06:22: DDR: Dialer Watch: watch-group = 1
03:06:22: DDR: network 222.222.222.222/255.255.255.255 UP,
03:06:22: DDR: primary UP
03:06:22: %ISDN-6-DISCONNECT: Interface BRI0/0:1
disconnected from 94134028 r2,
  call lasted 360 seconds
03:06:96677768412: %LINK-3-UPDOWN: Interface BRI0/0:1, changed state to down
03:06:94489281195: BR0/0 DDR: has total 0 call(s), dial_out 0, dial_in 0
r1#
03:06:94489280544: %DIALER-6-UNBIND: Interface BR0/0:1
  unbound from profile Di1
03:06:23: %LINEPROTO-5-UPDOWN: Line protocol on Interface BRI0/0:1,
  changed state to down
r1#
03:06:37: %ISDN-6-LAYER2DOWN: Layer 2 for Interface BR0/0,
  TEI 82 changed to down
r1#
03:07:01: %OSPF-5-ADJCHG: Process 1, Nbr 222.222.222.222 on Dialer1
from FULL to DOWN, Neighbor Down: Dead timer expired
!--- OSPF neighbor is down because the secondary link is down. !--- Dead timer has expired. r1#
r1#show ip ospf neigh

Neighbor ID      Pri   State           Dead Time   Address      Interface
222.222.222.222  1    FULL/DR         00:00:38   10.1.1.2    FastEthernet0/0
!--- OSPF neighbor is through the primary link only. r1#u all
All possible debugging has been turned off
r1#

```

Problemen oplossen

Deze sectie bevat informatie waarmee u problemen met de configuratie kunt oplossen. Voor informatie over het oplossen van algemene problemen met ISDN Lagen 1, 2, en 3, raadpleeg [het Gebruik van de ISDN status Opdracht voor BRI probleemoplossing](#).

Opdrachten voor troubleshooting

Bepaalde opdrachten met **show** worden ondersteund door de tool [Output Interpreter \(alleen voor geregistreerde klanten\)](#). Hiermee kunt u een analyse van de output van opdrachten met **show** genereren.

Opmerking: Voordat u **debug**-opdrachten afgeeft, raadpleegt u [Belangrijke informatie over debug-opdrachten](#).

Deze **debug** opdrachten kunnen op beide IPSec-peers worden uitgevoerd.

- **debug van crypto isakmp**-displays tijdens fase 1.
- **debug van crypto ipsec**-displays tijdens fase 2.
- **debug van crypto motor**—informatie van de crypto motor.

Deze **tonen** opdrachten kunnen op beide IPSec-peers worden uitgevoerd.

- **toon crypto isakmp sa**-Toont alle huidige IKE (Internet Key Exchange) veiligheidsassociaties (SAs) bij een peer.
- **Laat crypto ipsec sa**-displays de instellingen die worden gebruikt door huidige [IPSec] SA's.
- **Laat actieve crypto motorverbindingen**-displays huidige verbindingen en informatie betreffende versleutelde en gedecrypteerde pakketten.

Deze **duidelijke** opdrachten kunnen worden gebruikt om SA's te wissen.

- **duidelijke crypto isakmp** - ontslaat de eerste fase van de beveiliging.
- **duidelijke crypto sa** — ontslaat de fase twee veiligheidsverenigingen.

[Gerelateerde informatie](#)

- [IPsec-ondersteuningspagina](#)
- [DDR-back-up configureren en probleemoplossing](#)
- [Reserve-interfaces, zwevende statische routen en snelkiezer Watch voor DDR-back-up evalueren](#)
- [Back-uplijnen configureren met behulp van snelkiezer](#)
- [De ISDN-status van het scherm gebruiken voor BRI-probleemoplossing](#)
- [Technische ondersteuning - Cisco-systemen](#)